

‘I’M SO TIRED, I CAN’T GO ON!’ CHRONOTYPE AND ACADEMIC LIFE: THE ROLE OF SLEEP FOR HIGH SCHOOL AND UNIVERSITY STUDENTS

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Abstract

According to the literature during the developmental stages of adolescence and early adulthood crucial changes within brain systems lead to the shift in sleep patterns. Young people experience problems with falling asleep before late hours, and report difficulties getting up early mornings. At the same time the school and university schedules do not change in order to meet students’ biological needs corresponding to the sleep pattern mentioned above. It is therefore important to verify whether this mismatch between young people’s needs and the environmental expectations corresponds to their well-being in the area of stress levels and symptoms of burnout. It is also interesting to check whether intrapersonal factors such as resilience help young people to maintain high levels of well-being and protect them from burnout despite the adverse environmental conditions. The research was conducted with the main aim to assess the correspondence between resilience, stress and symptoms of academic burnout levels among high school and university students with different chronotypes. In the study participated 60 respondents aged 16-27 enrolled at different high schools or universities, who voluntarily and anonymously answered questions concerning their chronotype (Morningness-Eveningness Questionnaire), the levels of resilience (Resilience Measurement Scale), intensity of stress (Stress Feeling Questionnaire), and academic burnout symptoms (Student Burnout Inventory). Results obtained in the study prove that the duration of sleep of the research group is shorter than recommended 8-10 hours, and it is connected to higher indicators of stress and academic burnout. It was also discovered that morning chronotype and resilience served as protective factors lowering the levels of stress and academic burnout. Additionally, it was proved that high school students present higher than university student’s indicators of both stress levels and academic burnout symptoms. The results obtained in the study can serve as a starting point for the discussion on some institutional and organizational changes for the education system. Gathered data can also serve as a basis for preventive programs aimed at enhancement of sleep hygiene, and coping with stress strategies. It can also serve as an opening point for further studies on high school and university students’ well-being.

Keywords: *Chronotype, resilience, stress, school and academic burnout, adolescents and young adults.*

1. Introduction

An adequate sleep schedule and duration of sleep plays a crucial role in maintenance of well-being and somatic as well as psychosocial development of adolescents and young adults (Hirshkowitz et al., 2015). According to the National Sleep Foundation (2024) adolescents should sleep approximately 8-10 hours, while young adults should sleep for approximately 7-9 hours. School schedules and environmental requirements make it impossible for young people to follow such recommendations even though it has been proved that sleep deficits cause deterioration in well-being, cognitive functioning (Knutson et al., 2017), emotional and behavioral problems (Bebbe, 2011; Becker et al., 2018). Inefficient sleep schedule can be also perceived as a risk factor for depression, anxiety and school burnout (Poon et al., 2024; Roberts & Duong, 2014).

Research proves that an average Polish student spends approximately 33 hours per week fulfilling school duties (at school, during extra study hours, and doing their homework). While working so intensely, young people not only try to fulfill their duties but also meet all the external requirements and expectations of their teachers, parents, and peers, which in turn increases their stress, and decreases their quality of life and in turn deteriorates their sleep quality (Duda, 2017). Tight schedules, excessive pressure and maximum work overload are also observed in university students. Researchers underline the increasing problem of stress, academic burnout and drastic decrease in well-being, especially in students of highly demanding

studies and study majors (Molodynski et al., 2021) which also correspond with unhealthy sleep habits. It is therefore important to analyze the correspondence between the sleep schedules, chronotypes, and overall well-being of young people excessively engaged in school and university duties.

Research conducted until now proves that an average teenager or young adult experiences problems falling asleep before 11 P.M. while their optimal waking up time happens approximately at 8 A.M. or later (Adolescent Sleep Working Group et al., 2014). When an individual chronotype meets external needs of environments (e.g. school or university schedule) a person copes with academic demands better (Minges & Redeker, 2016; Yeo et al., 2021; Zerbini et al., 2017) otherwise they suffer cognitively and emotionally. Among protective factors preventing students from excessive stress or burnout there is a high level of resilience. It was discovered that there is a correlation between the chronotype and resilience level in students (Uslu, Özdemir, & Peşkirici, 2024) but since such a correspondence was not fully examined it is important to verify it further in future studies.

2. Objectives

The main aim of the presented study was to verify the correspondence between the time of the beginning of academic activities, sleep quality, chronotype, and resilience levels in high school students and university students.

3. Methods

3.1. Participants

In the study 60 volunteers (33 females and 27 males) participated. The mean age of the participants was $M=20.8$ ($SD=2.9$), the youngest participants were 16 years old, while the oldest were 27 years old. In the researched group there were 25 university students, 18 high school students, and 17 students of vocational high schools.

3.2. Materials

Circadian activity of respondents was assessed with Morningness-Eveningness Questionnaire - Self-Assessment (MEQ-SA) (Horne & Östberg, 1976). Resilience was measured with the Resilience Measurement Scale (Ogińska-Bulik & Juczyński, 2008). The levels of stress were assessed with Stress Feeling Questionnaire (Plopa & Makarowski, 2010). School burnout was measured with School Burnout Inventory (SBI) (Salmela-Aro, Kiuru, Leskinen, & Nurmi, 2009). Overall functioning and activity were assessed with additional questions concerning the daily schedule, sleep duration, and overall subjective levels of tiredness throughout the day.

4. Results

According to the obtained data respondents do not have enough sleep, they feel moderately tired throughout the day. Their chronotype can be perceived as rather intermediate with a tendency to the evening type. At the same time, they present moderate levels of resilience, stress levels and moderate levels of burnout symptoms. Detailed information is given in Table 1 below.

Table 1. The general characteristics of analysed features.

	<i>M</i>	<i>SD</i>	Min	Max
Hours of sleep	6.94	0.89	5.0	8.9
Tiredness throughout the day (1-5)	3.10	0.82	1	4
Chronotype	55.48	10.41	31	86
Resilience	79.60	10.65	58	107
Stress	53.50	11.25	33.4	76.0
School burnout symptoms	26.81	3.88	17.6	35.1

In the next step the mean differences between abovementioned properties in the group of university students, high school students and vocational high school students were calculated. One way ANOVA showed statistically significant differences in the mean levels of stress $F_{(2,57)}=4.82$; $p=.012$ and school burnout $F_{(2,57)}=3.91$; $p=.025$. According to Tukey's post-hoc analyses the mean level of stress experienced by high school students ($M=57.2$; $SD=11.6$) was significantly ($p=.009$) higher than the mean level of stress of university students ($M=48.1$; $SD=10.8$). Similarly, the mean level of school burnout symptoms

experienced by high school students ($M=28.4$; $SD=4.0$) was significantly ($p=.021$) higher than the mean level of academic burnout of university students ($M=25.1$; $SD=3.5$).

In the next step the regression analyses were conducted in order to identify the predictors of respondent's stress and academic burnout. The results are presented in Table 2.

Table 2. The predictors of stress and academic burnout.

Predictors of stress	<i>B</i>	<i>SE</i>	β	<i>t</i>	<i>p</i>
Hours of sleep	-0.58	0.41	-0.12	-1.42	0.162
Tiredness throughout the day	3.62	1.14	0.34	3.17	0.003
Chronotype	-0.17	0.08	-0.19	-2.13	0.038
Resilience	-0.48	0.11	-0.42	-4.36	0.000
$F_{(5,54)}=9.54$; $p<.001$; $R^2=0.38$					
Predictors of academic burnout	<i>B</i>	<i>SE</i>	β	<i>t</i>	<i>p</i>
Stress	0.18	0.05	0.47	3.92	0.000
Resilience	-0.11	0.04	-0.31	-2.54	0.015
Tiredness throughout the day	0.72	0.51	0.15	1.41	0.164
Hours of sleep	-0.44	0.29	-0.13	-1.24	0.221
Chronotype	-0.09	0.06	-0.14	-1.48	0.145
$F_{(5,54)}=10.27$; $p<.001$; $R^2=0.41$					

According to the results presented in Table 2, the regression model for stress explains 38% of the variance with three statistically significant predictors, i.e. resilience levels, tiredness throughout the day, and chronotype. The greater the tiredness, the stronger the experienced stress is, whereas the higher the resilience levels and closer to the morning type the chronotype, the less intensive the stress experienced by an individual is.

When it comes to the academic burnout, the proposed regression model explains 41% of the variance, with two statistically significant predictors, i.e. stress level and resilience level. The higher the stress levels, the greater the symptoms of academic burnout observed in respondents are, whereas for the resilience the relationship is reversed – the greater the resilience level, the less intensive are the symptoms of academic burnout experienced by individuals.

5. Discussion

The results obtained in the study described above are congruent with previous research proving that young people attending schools and universities do not get enough sleep (Becker et al., 2018; Crowley, Wolfson, Tarokh, & Carskadon, 2018). In agreement with previous studies was also the data showing the correspondence between tiredness throughout the day and elevated stress levels, which in the long-term perspective can lead to serious deterioration of mental health (Roberts & Duong, 2014; Bacaro, Carpentier, & Crocetti, 2023).

Worth noticing is the result proving that high school students suffer from both higher levels of stress and school burnout symptoms compared to university students. This result should be invested further in future studies in order to identify the causes of such a situation. It is possible that elevated levels of stress and school burnout correspond to less flexible timetables and curricula observed in high schools compared to universities (Duda, 2017; Gawel, 2017; Martin, Gaudreault, Perron, & Laberge, 2016), but there could be other reasons for such an outcome to occur.

According to the obtained results it is important to underline the role of the chronotype in the intensity of stress experiences as well as in overall functioning of an individual. It can be expected that the morning chronotype serves as a protective factor in coping with everyday stressful situations while evening chronotype increases the risk of experiencing tension and difficulties with daily struggles (e.g., Enright & Refineitti, 2017; Rodríguez Ferrante, Goldin, Sigman, & Leone, 2022).

One of the most important results obtained in the study concerns the role of resilience – both in the prevention of stress and school burnout. The data obtained in the study described above is similar to previous results of cross-cultural studies conducted in this area (Awad, 2024; Ma, 2023; Ran et al., 2020; Song et al., 2021).

The results obtained in the described study are important, but at the same time they need to be carefully interpreted. First of all, the sample participating in the study was relatively small. Secondly, all the data was collected based only on self-descriptive measures in cross-sectional design. Thirdly, many variables corresponding to the development and maintenance of school and academic stress and burnout were not included in the study design. Therefore future, especially longitudinal, studies are needed.

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